SEQUENCE LISTING

<110> Rondon, Isaac J
Ladner, Robert C

<120> BINDING PEPTIDES FOR CARCINOEMBRYONIC ANTIGEN (CEA)

<130> Sequence Listing DYX-016.1 US

<140> (not yet assigned)
<141> 2001-04-03

<150> US 09/541345
<151> 2000-04-03

<160> 151

<170> PatentIn Ver. 2.1

<210> 1
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<212> PRT
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<220>
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<220>
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<222> (1)
<223> Xaa is Asn, Asp or is absent

<220>
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<223> Xaa is Trp

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<222> (3)
<223> Xaa is Asp, Phe or Val

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<222> (15)
<223> Xaa is Arg, Leu Pro or Ser

<220>
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<222> (16)

<223> Xaa is Leu, Ser, Trp or Tyr

<400> 1
Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa
1 5 10 15

<210> 2
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: family of preferred CEA binding moieties

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<222> (6)
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<220>
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<220>
<221> VARIANT
<222> (9)
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<220>
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<222> (15)
<223> Xaa is Arg, Leu, Pro or Ser

<220>
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<222> (16)
<223> Xaa is Leu, Ser, Trp or Tyr

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Xaa Trp Val Cys Glu Xaa Xaa Lys Xaa Gln Trp Xaa Cys Asn Xaa Xaa
1 5 10 15

<210> 3
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<220>
<223> Description of Artificial Sequence: CEA binding loop

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<220>
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<220>
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<222> (9)
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Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Cys
1 5 10

<210> 4
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 4
Asn Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asn Ser Tyr
1 5 10 15

<210> 5
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 5
Asp Trp Val Cys Glu Asn Lys Lys Asp Gln Trp Thr Cys Asn Leu Leu
1 5 10 15

<210> 6
<211> 16
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding
polypeptide

<400> 6
Asn Trp Asp Cys Met Phe Gly Ala Glu Gly Trp Ala Cys Ser Pro Trp
1 5 10 15

<210> 7
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding
polypeptide

<400> 7
Asp Trp Val Cys Glu Lys Thr Thr Gly Gly Tyr Val Cys Gln Pro Leu
1 5 10 15

<210> 8
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding
polypeptide

<400> 8
Asn Trp Phe Cys Glu Met Ile Gly Arg Gln Trp Gly Cys Val Pro Ser
1 5 10 15

<210> 9
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding
polypeptide

<400> 9
Asp Trp Val Cys Asn Phe Asp Gln Gly Leu Ala His Cys Phe Pro Ser
1 5 10 15

<210> 10
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: parental
domain for design of microprotein display library

<220>
<221> VARIANT
<222> (1)..(12)
<223> amino acid positions 4 and 9 are invariant Cys;
all other positions Xaa are varied but not Cys, to
provide a library of 2x10(8) different peptides
based on the template sequence

<400> 10
Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa
1 5 10

<210> 11
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: parental
domain for design of microprotein display library

<220>
<221> VARIANT
<222> (1)..(11)
<223> amino acid positions 3 and 9 are invariant Cys;
all other positions Xaa are varied but not Cys, to
provide a library of 1x10(9) different peptides
based on the template sequence

<400> 11
Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa
1 5 10

<210> 12
<211> 12

<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: parental
domain for design of microprotein display library

<220>
<221> VARIANT
<222> (1)..(12)
<223> amino acid positions 3 and 10 are invariant Cys;
all other positions Xaa are varied but not Cys, to
provide a library of 1x10(9) different peptides
based on the template sequence

<400> 12
Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa
1 5 10

<210> 13
<211> 16
<212> PRT
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<220>
<223> Description of Artificial Sequence: parental
domain for design of microprotein display library

<220>
<221> VARIANT
<222> (1)..(16)
<223> amino acid positions 4 and 13 are invariant Cys;
all other positions Xaa are varied but not Cys, to
provide a library of 2.5x10(8) different peptides
based on the template sequence

<400> 13
Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa
1 5 10 15

<210> 14
<211> 16
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: variable
sublibrary sequence used in designing focused
secondary library

<220>
<221> VARIANT
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<223> Xaa is any amino acid except Cys

<220>
<221> VARIANT
<222> (5)..(6)
<223> Xaa is any amino acid except Cys

<400> 14
Xaa Xaa Xaa Cys Xaa Xaa Lys Lys Asp Gln Trp Thr Cys Asn Leu Leu
1 5 10 15

<210> 15
<211> 16
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<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: variable
sublibrary sequence used in designing focused
secondary library

<220>
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<222> (5)..(9)
<223> Xaa is any amino acid except Cys

<400> 15
Asp Trp Val Cys Xaa Xaa Xaa Xaa Xaa Gln Trp Thr Cys Asn Leu Leu
1 5 10 15

<210> 16
<211> 16
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<220>
<223> Description of Artificial Sequence: variable
sublibrary sequence used in designing focused
secondary library

<220>
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<222> (8)..(12)
<223> Xaa is any amino acid except Cys

<400> 16
Asp Trp Val Cys Glu Asn Lys Xaa Xaa Xaa Xaa Xaa Cys Asn Leu Leu
1 5 10 15

<210> 17
<211> 16
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<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: variable sublibrary sequence used in designing focused secondary library

<220>
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<223> Xaa is any amino acid except Cys

<220>
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<223> Xaa is any amino acid except Cys

<400> 17
Asp Trp Val Cys Glu Asn Lys Lys Asp Gln Xaa Xaa Cys Xaa Xaa Xaa
1 5 10 15

<210> 18
<211> 16
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<220>
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<220>
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<222> (6)..(7)
<223> Xaa is any amino acid except Cys

<220>
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<223> Xaa is any amino acid except Cys

<220>
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<223> Xaa is any amino acid except Cys

<220>
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<223> Xaa is any amino acid except Cys

<400> 18
Asp Trp Val Cys Glu Xaa Xaa Lys Xaa Gln Trp Xaa Cys Asn Xaa Leu
1 5 10 15

<210> 19
<211> 16
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<220>
<223> Description of Artificial Sequence: variable sublibrary sequence used in designing focused secondary library

<220>
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<222> (5)..(7)
<223> Xaa is any amino acid except Cys

<220>
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<223> Xaa is any amino acid except Cys

<220>
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<223> Xaa is any amino acid except Cys

<400> 19
Asn Trp Val Cys Xaa Xaa Xaa Lys Xaa Gln Trp Xaa Cys Asn Ser Tyr
1 5 10 15

<210> 20
<211> 16
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<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: variable sublibrary sequence used in designing focused secondary library

<220>
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<220>
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<223> Xaa is any amino acid except Cys

<400> 20
Xaa Trp Xaa Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Xaa Xaa Xaa
1 5 10 15

<210> 21
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: isolate of TN10/9 library found not to bind CEA

<400> 21
Asn Trp Arg Cys Lys Leu Phe Pro Arg Tyr Pro Tyr Cys Ser Ser Trp
1 5 10 15

<210> 22
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: isolate of
TN10/9 library found not to bind CEA

<400> 22
Arg Tyr Cys Glu Phe Phe Pro Trp Ser Leu His Cys Gly Arg Pro
1 5 10 15

<210> 23
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: conserved
amino acid positions in first family of CEA
binding peptides

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<222> (6)
<223> X is Asn, Leu, Met or Phe

<220>
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<223> X is Asp, Gly, Ile, Lys, Phe or Thr

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<223> X is Arg, Asn, Asp, Glu or Gly

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<223> X is Ala, Gly, His, Phe, Thr or Val

<220>
<221> VARIANT
<222> (15)

<223> X is Arg, Leu, Pro or Ser

<400> 23
Asp Trp Val Cys Glu Xaa Xaa Lys Xaa Gln Trp Xaa Cys Asn Xaa Leu
1 5 10 15

<210> 24
<211> 27
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic CEA binding peptide with C-terminal immobilization sequence

<400> 24
Ser Asn Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asn Ser
1 5 10 15

Tyr Ala Pro Gly Gly Glu Gly Gly Gly Ser Lys
20 25

<210> 25
<211> 27
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic CEA binding peptide with C-terminal immobilization sequence

<400> 25
Ser Asp Trp Val Cys Glu Asn Lys Lys Asp Gln Trp Thr Cys Asn Leu
1 5 10 15

Leu Ala Pro Gly Gly Glu Gly Gly Gly Ser Lys
20 25

<210> 26
<211> 27
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic CEA binding peptide with C-terminal immobilization sequence

<400> 26
Ser Asn Trp Asp Cys Met Phe Gly Ala Glu Gly Trp Ala Cys Ser Pro
1 5 10 15

Trp Ala Pro Gly Gly Glu Gly Gly Gly Ser Lys
20 25

<210> 27
<211> 27
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic CEA binding peptide with C-terminal immobilization sequence

<400> 27
Ser Asp Trp Val Cys Glu Leu Thr Thr Gly Gly Tyr Val Cys Gln Pro
1 5 10 15

Leu Ala Pro Gly Gly Glu Gly Gly Gly Ser Lys
20 25

<210> 28
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: C-terminal sequence for immobilizing peptides

<400> 28
Ala Pro Gly Gly Glu Gly Gly Gly Ser Lys
1 5 10

<210> 29
<211> 16
<212> PRT

<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: template
sequence for sublibrary used in construction of
focused secondary display library

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<223> X is any amino acid except Cys

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<223> X is any amino acid except Cys

<400> 29
Xaa Xaa Xaa Cys Xaa Xaa Lys Lys Asp Gln Trp Thr Cys Asn Leu Leu
1 5 10 15

<210> 30
<211> 16
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<220>
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sequence for sublibrary used in construction of
focused secondary display library

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<223> X is any amino acid except Cys

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1 5 10 15

<210> 31
<211> 16
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: template
sequence for sublibrary used in construction of
focused secondary display library

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<222> (8)..(12)
<223> X is any amino acid except Cys

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1 5 10 15

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<220>
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sequence for sublibrary used in construction of
focused secondary display library

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<223> X is any amino acid except Cys

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Asp Trp Val Cys Glu Asn Lys Lys Asp Gln Xaa Xaa Cys Xaa Xaa Xaa
1 5 10 15

<210> 33
<211> 16
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<220>
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sequence for sublibrary used in construction of
focused secondary display library

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1 5 10 15

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<220>
<223> Description of Artificial Sequence: template sequence for sublibrary used in construction of focused secondary display library

<220>
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<222> (5)..(7)
<223> X is any amino acid except Cys

<220>
<221> VARIANT
<222> (9)
<223> X is any amino acid except Cys

<220>
<221> VARIANT

<222> (12)
<223> X is any amino acid except Cys

<400> 34
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1 5 10 15

<210> 35
<211> 16
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<220>
<223> Description of Artificial Sequence: template sequence for sublibrary used in construction of focused secondary display library

<220>
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<222> (1)
<223> X is any amino acid except Cys

<220>
<221> VARIANT
<222> (3)
<223> X is any amino acid except Cys

<220>
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<222> (14)..(16)
<223> X is any amino acid except Cys

<400> 35
Xaa Trp Xaa Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Xaa Xaa Xaa
1 5 10 15

<210> 36
<211> 16
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<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: family of CEA binding polypeptides

<220>

<221> VARIANT
<222> (1)
<223> Xaa is Asp, Asn, Ala or Ile

<220>
<221> VARIANT
<222> (3)
<223> Xaa is Val, Ile, Met, Tyr, Phe, Pro or Asp

<220>
<221> VARIANT
<222> (5)
<223> Xaa is Asn, Glu or Asp

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<221> VARIANT
<222> (6)
<223> Xaa is Leu, Phe, Typ, Trp, Val Met, Ile or Asn

<220>
<221> VARIANT
<222> (7)
<223> Xaa is Phe, Leu, Asp, Glu, Ala, Ile, Lys, Asn,
Ser, Val, Trp or Tyr

<220>
<221> VARIANT
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<223> Xaa is Lys, Phe, Asp, Gly, Leu, Asn or Trp

<220>
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<223> Xaa is Asn, Pro, Phe, Gly, Asp, Ala, Ser, Glu, Gln
or Trp

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<221> VARIANT
<222> (10)
<223> Xaa is Gln or Lys

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<223> Xaa is Phe, Thr, Met, Ser, Ala, Asn, Val, His,
Ile, Pro, Trp or Tyr

<220>

<221> VARIANT
<222> (14)
<223> Xaa is Asn, Asp, Glu, Pro, Gln or Ser

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<221> VARIANT
<222> (15)
<223> Xaa is Val, Leu, Ile, Pro, Ala, Gln, Ser, Met,
Glu,Thr, Lys or Trp

<220>
<221> VARIANT
<222> (16)
<223> Xaa is Leu, Met, Val, Tyr, Ala, Ile, Trp, His,
Pro, Gln, Glu, Phe, Lys or Arg

<400> 36
Xaa Trp Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Trp Xaa Cys Xaa Xaa Xaa
1 5 10 15

<210> 37
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding
polypeptide

<400> 37
Asp Trp Met Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Leu Met
1 5 10 15

<210> 38
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding
polypeptide

<400> 38
Asp Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Leu Met
1 5 10 15

<210> 39
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding
polypeptide

<400> 39
Asp Trp Ile Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Gln Met
1 5 10 15

<210> 40
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding
polypeptide

<400> 40
Asn Trp Ile Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Gln Glu
1 5 10 15

<210> 41
<211> 16
<212> PRT
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<220>
<223> Description of Artificial Sequence: CEA binding
polypeptide

<400> 41
Asp Trp Ile Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Gln Val Lys
1 5 10 15

<210> 42
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding
polypeptide

<400> 42
Asp Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Val Met
1 5 10 15

<210> 43
<211> 16
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<220>
<223> Description of Artificial Sequence: CEA binding
polypeptide

<400> 43
Asp Trp Met Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Gln Ile
1 5 10 15

<210> 44
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding
polypeptide

<400> 44
Ile Trp Asp Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Pro Ala Pro
1 5 10 15

<210> 45
<211> 16
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<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding
polypeptide

<400> 45
Asp Trp Ile Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Ile Arg

1 5 10 15

<210> 46
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 46
Asp Trp Met Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Val Val
1 5 10 15

<210> 47
<211> 16
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<220>
<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 47
Asp Trp Ile Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Ala Ile
1 5 10 15

<210> 48
<211> 16
<212> PRT
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<220>
<223> Description of Artificial Sequence: CEA binding polypeptide

<400> 48
Asp Trp Ile Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Met Ala
1 5 10 15

<210> 49
<211> 16
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<220>
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polypeptide

<400> 49
Asp Trp Val Cys Glu Phe Leu Lys Met Gln Trp Ala Cys Asn Val Leu
1 5 10 15

<210> 50
<211> 16
<212> PRT
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<220>
<223> Description of Artificial Sequence: CEA binding
polypeptide

<400> 50
Asp Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asn Val Met
1 5 10 15

<210> 51
<211> 16
<212> PRT
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<220>
<223> Description of Artificial Sequence: CEA binding
polypeptide

<400> 51
Ala Trp Pro Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Pro Pro Gln
1 5 10 15

<210> 52
<211> 16
<212> PRT
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16-mer microprotein analogues

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16-mer microprotein analogues

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16-mer microprotein analogues

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16-mer microprotein analogues

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16-mer microprotein analogues

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16-mer microprotein analogues

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16-mer microprotein analogues

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